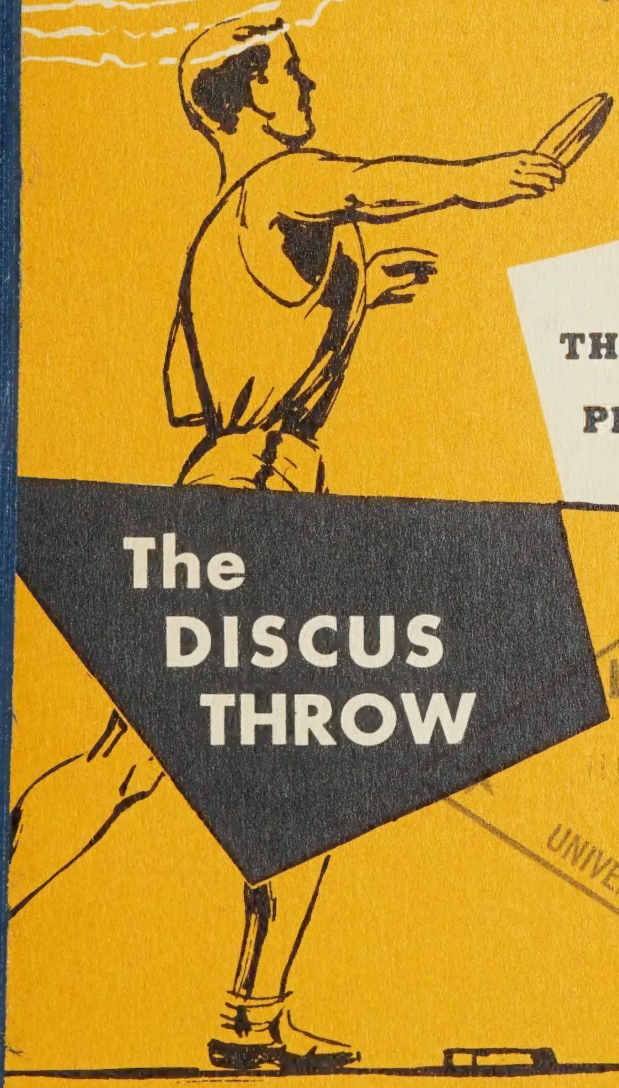
Canada. Royal Canadian Air Force
Track and field [booklets]
The Discus Throw. RCAF Pamphlet 82. [rev. ed. 1960]

RCAF PAMPHLET 82

TRACK & FIELD

[Rev. ed. 1960]



THE FITTER
THE PERFORMER
THE FINER THE
PERFORMANCE

The DISCUS THROW

THE DISCUS THROW

PUBLISHED BY

DIRECTORATE OF PERSONNEL ADMINISTRATION

RECREATION BRANCH

ROYAL CANADIAN AIR FORCE

IN CO-OPERATION WITH

THE DEPARTMENT OF NATIONAL HEALTH & WELFARE

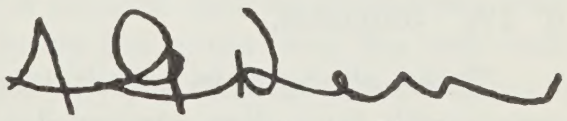
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA,

FOREWORD

In the Royal Canadian Air Force, wholesome and constructive recreation programmes play an important role in the development of individual character and Service efficiency. RCAF station recreation programmes are designed to provide opportunities for participation by all personnel and their families the whole year round.

To assist the Recreation Specialists and the many volunteer leaders on whose services the extent and quality of recreation programmes depend, and to assist participants to improve their skills, the RCAF prepares and distributes special guidance and instructional material concerning the many aspects of recreation. The RCAF series of sports booklets are also intended to assist Service personnel and their families to enrich their leisure time in Service life by increasing their interest in sports and improving their playing ability within the best rules of sportsmanship.

The Royal Canadian Air Force is indebted to the Department of National Health and Welfare for their co-operation and assistance in the preparation of the Track and Field booklets and to the author, Flight Lieutenant J. B. Kirkpatrick (Supplementary Reserve) who, in his civilian occupation, is Director of the School of Physical Education of a prominent Canadian University.



(J. G. Kerr)
Air Vice Marshal
for Chief of the Air Staff.

August, 1957

"The fitter the

PERFORMER

the finer the

PERFORMANCE"

THE DISCUS THROW

The discus throw is one of the earliest field events. It was highly regarded by the ancient Greeks, and the champion discus thrower enjoyed a distinction which was not accorded to athletes in other events.

When the modern Olympic Games began in 1896, the discus was thrown from a platform. This method proved impractical, and was soon replaced by the throw, with a turn, from a circle. At first, the circle was the same size as for the shot put, but the difficulty of staying within the circle soon resulted in an increase to the present 8′ 2½″ diameter.

These changes in regulations, plus much experimentation with form, has almost doubled the distance of the throw. The present official world record, held by Fortun Gordien of the United States, stands at 194′ 6″, and it is probable that Gordien and others will soon attain throws of more than 200 feet.

RULES FOR COMPETITION

1. The discus shall be thrown from a circle, 8′ 2½″ in diameter (inside measurement).
2. The order in which the competitors take the trials shall be drawn by lot.
3. In all throwing events, each competitor shall be allowed three trials, and the six best shall have three additional trials. No competitor shall be allowed the additional trials unless he shall have registered one fair throw. Each competitor shall be credited with the best of his throws.
4. If a competitor is entered in both a track and a field event, or in more than one field event taking place simultaneously, the judges may allow the competitor to take his trials in an order different from that decided upon prior to the start of the competition, but not so that any trial is carried forward to a subsequent round. Unless such permission from the judges has been received, a competitor who misses his turn shall not be permitted to take the trial so missed.
5. It shall be a foul throw, and not allowed to count, if the competitor after he has stepped into the circle and commenced to make a throw, touches with any part of his body the circle or ground outside, or releases the discus in making an attempt.
6. The competitor must not leave the circle until the discus has touched the ground, and he shall then, from a standing position, leave the circle from the rear half, which shall be indicated by a chalk line drawn through the centre and extended outside the circle, not less than 30 inches on each side of it.
7. A foul throw or releasing the discus in making an attempt shall be recorded as a throw, but shall not count.
8. All throws, to be valid, must fall within the inner edge

of the lines marking a sector of 90°, the radial lines crossing at the centre of the circle.

9. The measurements of each throw shall be made from the nearest mark made by the fall of the discus, to the inside of the circumference of the circles along a line from the mark made by the discus to the centre of the circle.

10. All measurements must be made with a certified steel tape, graduated in centimetres or half inches.

11. Distances, if measured in metres, shall always be recorded to the nearest centimetre below the distance covered, i.e., fractions less than one centimetre must be ignored. Distances, if measured in feet, shall be recorded to the nearest quarter inch, and if over 100 feet, shall be recorded to the nearest half inch below the distance covered, i.e., fractions less than a quarter inch or half inch respectively must be ignored.

12. In measuring, that point of the measuring tape recording the distance achieved, must be held by an official at the circle.

13. In the event of a tie, the second best performance of the competitors shall decide the tie. If the tie still remains, the third best, and so on. A record may be established in working off a tie.

14. A distinctive flag or disc shall be provided to mark the existing Canadian record and, when appropriate, the existing provincial record. A distinctive flag shall be provided also to mark the throws of each competitor.

15. Competitors shall use only such discus or discuses as are provided by the organizers of the meet.

16. Prior to the competition, the discus or discuses must be weighed on a governmentally approved balance.

17. No harness, instrument or device of any kind which can be used as a support when making a throw shall be allowed.

18. The maximum inclination of the runways for all throwing events shall be one foot rise or fall per 100 feet laterally, and one foot rise or fall per 1,000 feet in the throwing direction.
19. Doping is the employment of drugs with the intention of increasing athletic efficiency by their stimulating action upon muscles or nerves, or by paralyzing the sense of fatigue. Any competitor who uses drugs as defined above shall be suspended from active participation in amateur athletics for such periods as the registration committee of the A.A.U. of C. shall prescribe, and any person aiding or abetting in the use of drugs shall be permanently excluded from any ground where the rules of the A.A.U. of C. are in force.
20. Competitors must wear clothing which is clean and so designed and worn as not to be objectionable.

EQUIPMENT

The Discus

1. Construction—The discus shall consist of a wooden body, with metal plates set flush into the sides of the latter and shall have, in the exact centre of the circle framed by the metal rim, a means of securing the correct weight.
2. It shall conform to the following specifications:

Weight:	**Men**	**Women**
Minimum:	2 kilogrammes (4 lbs. 6⅔ ozs.)	1 kilogramme (2 lbs. 3¼ ozs.)
Outer diameter of metal rim		
Minimum:	219 millimetres (8⅝ in.)	180 millimetres (7-3/32 in.)
Maximum:	221 millimetres (8-11/16 in.)	182 millimetres (7-5/32 in.)
Diameter of metal plates:		
Minimum:	50 millimetres (1-31/32 in.)	50 millimetres (1-31/32 in.)
Maximum:	57 millimetres (2-7/32 in.)	50 millimetres (2-7/32 in.)
Thickness at centre:		
Minimum:	44 millimetres (1¾ in.)	37 millimetres (1-15/32 in.)
Maximum:	46 millimetres 1-13/16 in.)	39 millimetres (1-17/32 in.)
Thickness of the rim at a distance of 6 millimetres (¼ inch) from the edge:		
Minimum:	12 millimetres (½ inch)	12 millimetres (½ inch)

The edge of the metal rim shall be rounded in a true circle.

A metal discus complying with the official measurements, weight and conditions may be used.

3. Each side of the discus shall be identical and shall be

made without indentations, projecting or sharp edges. The sides of the curve of the rim to a circle a distance of 25 millimetres (1 inch) from the centre of the discus.

The thickness at 25 millimetres (1 inch) from the centre of the discus shall be exactly the same as at the centre.

For instructional and practice purposes, a rubber discus of official size and weight is recommended as being more durable, less expensive, and somewhat safer than either the metal or the wooden discus. The athlete who expects to compete, however, should practise with the type of discus he will have to throw in competition.

Shoes

The most common type of shoes used in discus throwing in one with six spikes in each sole and two spikes in each heel. This shoe has a stiff counter to give support to the heel spikes. Some athletes prefer to remove all of the spikes but one from the sole of the pivot foot (or from both feet), leaving that one in the centre of the sole. Others prefer not to use spikes at all, but an ordinary running shoe.

The question of shoes seems to be a matter that is best left to individual choice, after experimenting with different kinds of footwear.

The Circle

The earth or clay inside the circle shall be packed hard and firm, and be $\frac{3}{4}$" lower than the ground outside the circle. The top of the circle ring should be level with the ground outside it.

The circle shall be 8' $2\frac{1}{2}$" in diameter (inside measurement) and shall be made of steel or iron. It shall be $\frac{1}{4}$" thick and 3" in height and shall be painted white.

After each throw has been completed, the surface of the area within the circle should be levelled and smoothed to avoid the disadvantages caused by uneven and rough spots.

The Flags

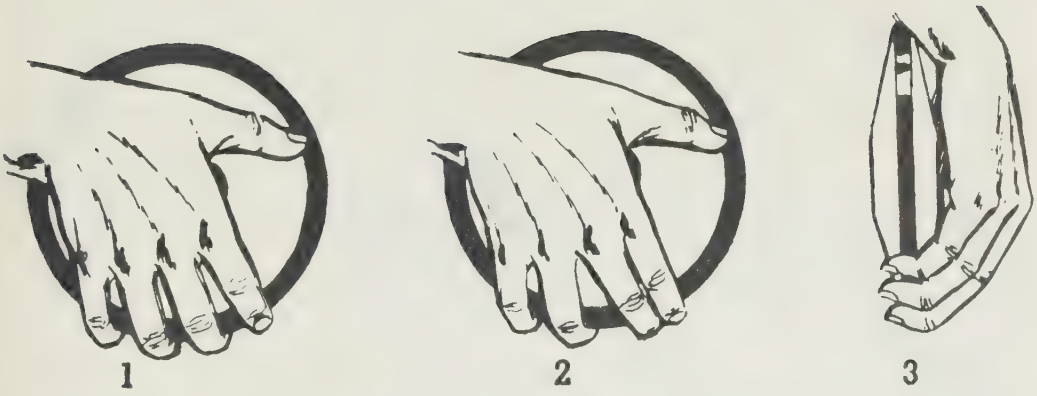
The sector flags shall be made of metal. They should be rectangular in shape, measuring approximately 4 inches by 7 inches, and should be mounted on standards $\frac{4}{16}$" in diameter, and not less than 36 inches in length.

TECHNIQUES

The Grasp

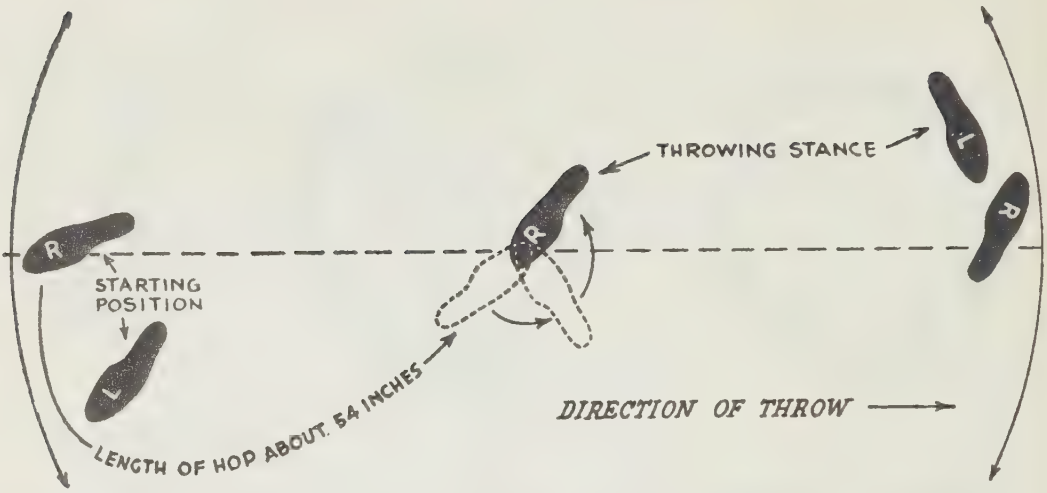
The recommended grasp is shown in Figures 1 and 2 below. The grasp is essentially the same. The discus is held flat against the palm, with the first joints of the fingers overlapping, and grasping it firmly. The thumb rests on top of the discus, in line with forearm. Note that the wrist is slightly "cocked" so that the hand is behind the weight centre of the discus. In figure 2 the index finger and neighbouring forefinger are joined to give more power to the final flick, to which fingers as well as wrist contribute.

In the "talon grasp" shown in figure 3, and used by some top flight performers, the palm of the hand is held away from the discus. The advantages of greater wrist movement and less friction claimed for this grasp do not, however, compensate sufficiently for the loss of stability and control, particularly for beginners.



Initial Stance

The thrower takes his stance at the back of the circle, with the feet from 16 to 20 inches apart, and approximately at right angles to the direction of the throw. Body weight is evenly distributed and the trunk is almost erect. The discus is held with the preferred grasp. The knees are slightly bent, and the whole body is relaxed. Usually the competitor will take two or three preliminary swings of the discus. These should be full arc swings, during which the body remains relaxed. They are not a part of the throw but serve the purpose of checking the hand grip for balance and comfort, and, on the backward phase of the last swing, getting into position to begin the turn.



Movement Across the Circle

As the last preliminary swing is completed, the weight will be on the rear foot, the knees will be slightly bent, and the trunk will be rotated fully to the right, with the arm extended backward even further, well past the plane of the shoulders. From this position, the movement across the circle begins with a pivot on the ball of the left foot, followed by a second pivot on the right foot completing the turn. The left foot must contact the ground as soon as possible on completion of the turn, in order that the thrower may be in the proper position to make his final effort without loss of speed, control, or direction.

As the left foot touches the ground, in the line of the throw and about 36 inches from the right foot, the weight is again on the right foot. Both knees are bent and pointed slightly outwards, and the line of the shoulders is in the direction of the throw. The arm, however, is still behind the plane of the shoulders.

The Delivery

In delivering the discus there are, apart from the momentum gained through the turn and movement across the circle, four distinct sources of power. These are:

1. The forward and slightly upward drive contributed by the right leg as it is straightened.
2. The pivotal motion accomplished by bracing the left leg and by rotating the trunk, hips leading, to the left,

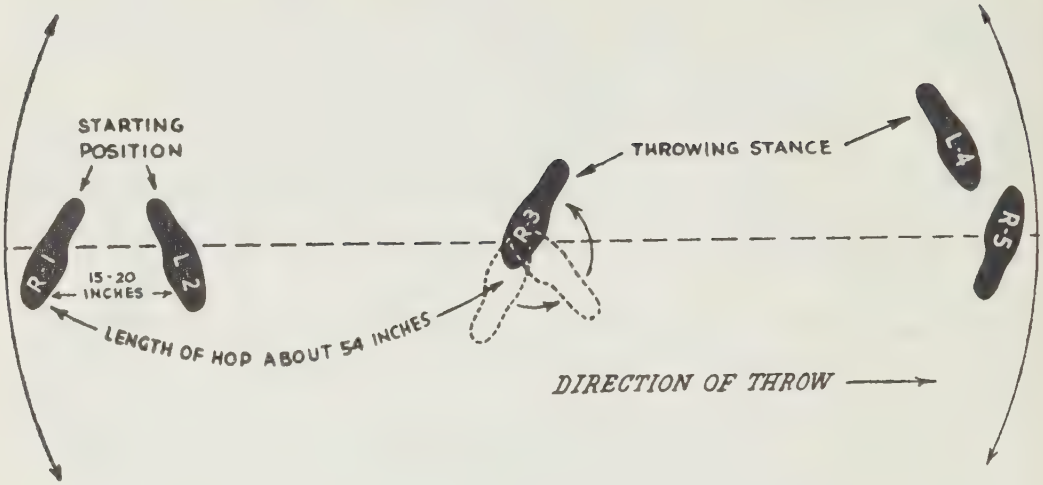
and at the same time thrusting the hips forward so that both hips and shoulders are squarely to the front. The importance of this forward 'hip thrust' in this phase of the delivery cannot be over-emphasized.

3. The 'striking' motion of the throwing arm which has lagged behind the plane of the shoulders until they are square to the front but is now whipped vigorously forward.
4. The flick of the wrist and of the fingers which, as they snap forward and across the discus to the left, imparts both the final push and a clockwise spin which gives stability to the discus in flight, just as the rifling in a gun barrel does to the flight of a bullet.

It should be obvious that these four sources of power do not act separately and independently, but, beginning with the first drive from the right leg, are blended into a cumulative effort which reaches its climax as the discus is rifled from the hand. The body weight at this point is on the left foot, with the body still moving forward.

The Recovery

The word 'recovery' is used rather than 'follow through', because the discus has already left the hand, and the last action is simply designed to recover balance and to keep the thrower within the circle. The combined momentum of his movement across the circle, and the vigorous action of throwing will, unless duly checked, carry the body past its point of balance. To keep from falling, the right foot is brought forward quickly to the front of the circle, and the body weight is transferred to it.



Variations in Style

The type of turn recommended for beginners is the spin turn, previously described, which has the advantage of maintaining continuous contact with the ground, and hence is easier to control. Once this turn has been mastered, however, any athlete who shows promise in the event should experiment with the jump turn, which builds up forward as well as rotation speed more rapidly than the spin turn, but is harder to control. All top flight throwers today use the jump turn.

To begin the jump turn, the athlete stands with his back to the direction of the throw, rather than sideways. The right foot is on the proposed line of flight, with the left foot close to the edge of the circle, about 12 to 14 inches away. As the last preliminary swing is taken, the body is coiled fully to the right. In the turn, the right foot is brought over and around the left, which leaves the ground as the athlete hops to land on the right foot. In this motion he progresses about three feet across the circle. When the left foot again contacts the ground, the body should be in throwing position, and the delivery will be the same as for the spin turn.

Mechanical Principles Which Apply to Hurling the Discus

1. The discus throw and the hammer throw are the only two events in which a turn is used to add to the speed of the missile as it leaves the hand. The greater the controlled speed, the farther the discus will go; uncontrolled speed will result in loss of distance.

2. During the movement across the circle, it is not possible for the feet to follow precisely the line of flight of the discus. BUT, the body's centre of gravity should move straight across the circle in the direction of the throw.
3. To travel the farthest possible distance in flight, the discus must slice the air smoothly with its edge. Wobble is waste.

4. Under normal conditions, the optimum angle of flight is about thirty degrees, but with a strong following wind, the discus should be thrown at a higher angle, to give the wind a chance to carry it; while against a headwind, a lower angle gives the best results.

Personal Factors

As in all weight events, strength is of great importance, but is no more essential than speed, co-ordination and timing. Because centrifugal force is a factor, the taller, longer armed competitor has a mechanical advantage. Most top flight discus throwers are tall men (6 feet or more), weighing 190 pounds or more. Very good distances may be registered by smaller men who possess speed, co-ordination and timing to a high degree, and who have adapted their style of throwing to make full use of these assets, but this is one event in which a good big man should always beat a good little man.

If You Have Not Tried This Event Before, Begin By:

1. Learning the grasp. Be sure that your fingers overlap the edge of discus enough to give control, but only with the FIRST joints of the fingers.
2. Swinging the discus. Practise repeated, easy, full arm swings. Be sure that the discus is held UNDER, and not in front of the hand, where many beginners tend to hold it for fear it will drop. If you support the discus with the other hand only at the top of the swing, centrifugal force will hold it in position — UNDER the hand — and all other points in the swing, including the end of the backswing, at which there should be no appreciable pause.
3. Throwing the discus, with special attention to releasing it properly. The discus should leave the hand with a clockwise spin (for a right handed thrower) which is given by the index finger. A discus which has been properly released will spin smoothly through the air, without wobbling. Be sure that the discus is released from UNDERNEATH the hand. A very common fault is to turn the wrist at the last moment so that the discus is tilted up instead of sailing flat. Keep the proper thirty degree angle in mind, and keep on practising till you can make the discus 'scale' properly (i.e. sail through the air smoothly at the proper angle) every time.

   If you are having difficulty in getting the proper 'feel' of the release, these two devices may help:

   (a) With a bowling action, release the discus so that it rolls along the ground on its edge. Try to make it stay upright and go in a straight line as far as possible. Aim at a target about fifteen yards away. When you can come close to the target (with the discus leaving your hand from the index finger), you should be able to obtain a proper 'scale' in throwing.

(b) Toss the discus straight up in front of you, with the edge toward you. Release it from the index finger at about shoulder height. Catch and repeat again and again until you have the 'feel' of the release.

4. Practising standing throws. You cannot do too many of these. Remember and try to utilize all the sources of power, beginning with the leg drive. As you practise, try to increase the power of your throw, but to keep the proper scale.
5. Adding the turn. First try the turn without throwing the discus, but once you have the feel of the turn, and can control your movements, there is no substitute for throwing the discus. You must throw, not just hundreds, but thousands of times to establish and perfect your form. Never sacrifice form for speed, but try for more speed as your control improves. Your best throw will be the one in which you make use of the maximum speed of which you are capable while maintainig the fundamentals of good form.
6. Substituting the Jump Turn for the spin. Any athlete who shows promise in this event should learn the jump turn, used by all the best throwers in the world today. It is harder to control, but unquestionably gives extra momentum which adds distance to the throw.

Training is Imperative

Discus throwing calls upon many sets of muscles, so all round development is important. As for other weight events, weight training is recommended as a way of building up and maintaining strength, particularly between competitive seasons. Particular attention should be given to developing the muscles of the legs, the abdomen, and the throwing muscles of the trunk and arms. Exercises to develop wrist and finger strength are also helpful.

An athlete who has kept himself in condition (e.g., through weight training and by active participation in a seasonal sport), should begin serious training at least six

weeks before competition begins. During early training sessions, activities to develop strength and speed should be stressed, along with practise and more practise to perfect the technique of the event itself. When throwing the discus in practise, the athlete should always throw from a measured circle; otherwise, he may fall into the habit of taking more than the regulation distance in his turn, or even if he does not, the presence of a circle during competition may be a mental hazard. It is also wise, on occasion, to practise in rainy weather, or at least to throw with a wet and muddy discus. Such conditions frequently occur in competition, and it is well to know beforehand what adjustments in style and equipment are needed to give the best results. The athlete should experiment with the use of grip aids such as resin or balsam of fir.

The same assets which make a man a good discus thrower should make him a good performer in other events as well. Apart from other weight events, pole vaulting and hurdling demand similar qualifications. The development of speed is of such importance as to make sprints and sprint starts an essential part of the discus thrower's training, whether he competes as a sprinter or not. It adds spice to the training programme, and adds to the athlete's possible contribution to his team, if he trains for and competes in a second event.

Whether in pre-season training or during the competitive season, every practise period should begin with a gradual warm up, and the more strenuous part of the work out should come only after all parts of the body, but particularly those parts upon which the greatest strain will be placed, have been prepared. The preparation for discus throwing should begin with jogging and calisthenics, but these alone will not suffice. The best way to warm up for discus throwing is by discus throwing. The athlete should begin with very easy throws, and, over fifteen or more throws gradually work up to maximum effort.

Suggested Weekly Practise Schedule for the Competitive Season

Monday:

1. Jog a quarter mile.
2. Do 220 yards of "longs and shorts", i.e., alternate 12 long bounding strides with 12 short strides, taken very rapidly with a high knee action.
3. Do 5 minutes of conditioning exercises, employing abdominal, trunk, and shoulder girdle exercises.
4. Take fifteen standing throws, concentrating on form. Begin easily, and work up to full effort on the last three throws.
5. Take fifteen throws from the circle, concentrating on form.
6. Do ten minutes of sprint practise — starts and short sprints.
7. Rest a few minutes, keeping warm by walking, and taking several easy standing throws.
8. Take six full effort throws from the circle. On this, and on all other days when full effort throws are taken, record the distance of each of your throws. By so doing, you can not only check on your progress, but can determine the number of full effort throws usually needed to produce your best throw. Relax between throws.
9. Jog a quarter mile, then shower.

Tuesday:

Same schedule.

Wednesday:

1. Jog a quarter mile.
2. Do 220 yards of longs and shorts, then jog 220 yards.
3. Do five minutes of conditioning exercises.
4. Take fifteen standing throws, beginning easily, and working up to full effort.

5. Take a dozen or more full effort throws from the circle, relaxing between each throw.
6. Jog a quarter mile, then shower.

Thursday:

1. Jog a quarter mile.
2. Do 220 yards of longs and shorts, then jog 220.
3. Do five minutes of conditioning exercises.
4. After a few easy warm up throws, take a dozen standing throws, at somewhat less than full effort, concentrating on form
5. Take twelve throws from the circle, concentrating on form. Work particularly to overcome any faults which may have been observed on Wednesday.
6. Jog a quarter mile, then shower.

Friday:

Rest, or do some light jogging and calisthenics. No throwing.

Saturday:

Day of competition. Be at the track in time to take a full warm-up prior to the event, including a number of practise throws, beginning with easy standing throws and ending with full effort throws from the circle. You should then be ready to put forth your best effort from the very first competitive throw, instead of wasting two or three throws in warming up during the actual competition. Keep warm between throws during the competition. If you have long to wait between turns, take some standing throws while waiting for your next throw.

Athletes who are obliged to limit their practise to three days a week should schedule them every second day. It is suggested that the plan outlined above for Monday, Wednesday and Thursday be used on the first, second and third days respectively.

It is impossible to suggest a practise schedule that will suit every athlete at each stage of his training. The above schedule should be varied to provide for individual needs. Some athletes will require more intensive work; others will require less.

Conditioning Exercises for Discus Throwers

1. Running on the spot, with high knee raising. Begin slowly, work up to top speed, then alternate between easy and top speed.
2. Deep knee bends. From standing position, feet comfortably apart, raise to full stretch position on the toes, then, with back straight, bend to full squat position — reverse movement to standing position; 30 or more repetitions. To increase the difficulty of this exercise, use weights — e.g., hold a 16 lb shot, or strap a knapsack containing sand to your shoulders.
3. Jumping Jack. From full squat position jump as high as you can in the air, with body full stretch. On landing resume squat position, and repeat whole action ten or more times. Again weights may be used to increase the intensity of this exercise.
4. From a back lying position, sit up to touch, in sequence, the knees, and then the toes. This is done in fast tempo, to a count of four -- up — touch knees — touch toes — and back. Keep it up for a minute or more.
5. From a back lying position, raise the feet six inches from the ground, keeping the knees straight, and hold for 30 to 60 seconds. Vary this exercise by keeping one foot six inches from the ground, while the other leg is slowly raised to a vertical position — then back. Alternate legs several times.
6. From a kneeling position on all fours, lift the right hand and stretch the right arm across and underneath the body as far as possible, then fling vigorously outward

and upward. As the trunk twists the head follows the arm. The supporting arm is kept straight. Alternate and repeat for a full minute or more. To vary slightly, do the exercise with a rebound — i.e., as the arm starts back from the top of the outward swing, fling outward and upward again. Relaxation is needed to give a full movement of the arm. Alternate for a minute or more.

7. Clasp the hands behind the head and, with feet astride, bend forward from the waist and circle the trunk several times in a clockwise direction, then in a counter clockwise direction. Repeat several times.
8. With fingers slightly curled, bend the wrists as far as possible — forward, then backward, then to each side. Repeat until wrists tire, then relax by shaking the hands loosely. To increase the intensity of the exercise, hold a weight between the thumb and fingers — e.g., a discus.
9. Do push ups, keeping the body straight from heel to head throughout the exercise. To increase the difficulty of the exercise, do finger push ups, in which the weight is supported on the thumb and fingers instead of on the palm. As a further progression, begin with the weight on the palms, but continue the push up each time till the weight is supported on the fingers and thumb.
10. Strap an old discus, or object of similar size and weight to the hand. Without releasing the object, practise the turn in the circle. Increase the speed of your turn as control improves with practise. Do this a dozen times or more.

Diet

Wholesome, well-balanced meals which follow Canada's Food Rules are essential. Food fads and fancies should be avoided as should greasy foods, experimentation with unfamiliar dishes, and foods that disagree with the individual. Since champion athletes come from countries whose customary diets differ widely, athletic success can scarcely be attributed to eating specific foods. Care should be taken to chew food well and to see that meals are scheduled three to four hours prior to participation in competition.

Sleep

Eight to nine hours sleep in a cool room on a firm mattress every night is recommended generally. "Sleeping in" the next day does not make up for sleep lost the previous night and tends to upset the regular schedule.

Stimulants

Available records fail to support the idea that stimulants and drugs improve performance. On the contrary, various studies show that even the use of tobacco and alcohol make top physical performance unobtainable.

Emotional Stability

A desirable emotional approach to competition is frequently the determining factor in achieving success. Enthusiasm, confidence, perseverance and patience are essential — you can't win without them. Self confidence is developed through efficient coaching and adequate competition.

"Staleness", so often attributed to physical causes, is more likely to be the result of emotional "upset", "let down" or "fatigue" growing out of discouragement or boredom. A complete rest, light training or a change of activity are effective remedies.

Medical Check-up

It is always advisable to have a medical examination prior to the intensive training and competitive season.

CLASSIFICATION FOR COMPETITION

Sanctioned by the Amateur Athletic Union of Canada

JUNIORS are boys under twenty years of age, i.e., boys who have not reached their twentieth birthday.

JUVENILES are boys under eighteen years of age, i.e., boys who have not reached their eighteen birthday.

MIDGETS are boys under sixteen years of age, i.e., boys who have not reached their sixteenth birthday.

Note: (a) The age classification shall be as of the date of competition of the first day of a scheduled two-day meet.

(b) Midget, juvenile and junior athletes may compete in one age class only at any A.A.U. sanctioned meet in track events. A midget may not compete above the juvenile class in track events. A juvenile may not compete above the junior class in track events. The only exception to the above rule is that a midget or juvenile may advance one class for a relay race, provided that he has not competed on a relay team in his own class.

(c) Midget, juvenile and junior athletes may compete in a class above their respective classes in field events where no field event is scheduled in their class.

SCHOOL BOYS are boys under twenty years of age, i.e., boys who have not reached their twentieth birthday on the day of the meet. School boys, as defined above must have been regularly enrolled for a period of six months and be in attendance at an authorized public, high or preparatory school.

RESOURCE MATERIALS

Publications

"Championship Technique in Track and Field" — by Dean B. Cromwell — pp. 276-294 — published by McGraw-Hill Book Co., Inc., 253 Spadina Road, Toronto — 1953. Price $6.00.

"Field Techniques Illustrated" — by D. Canham and T. Micoleau — pp. 62-70 — published by A. S. Barnes Co. (Canadian Agent Copp Clark Co., Ltd., 517 Wellington St., Toronto) — 1952. Price $1.75.

"Fundamentals of Track and Field Coaching" — by Richard I. Miller — pp. 145-159 — published by McGraw-Hill Book Co., Inc., 253 Spadina Road, Toronto — 1953. Price $5.00.

"In Athletics Do it This Way" — by Sandy Duncan, Secretary, British Olympic Association — pp. 76-85 — published by John Murray, Albermarle St., London W., England.

"Modern Track and Field" — by J. Kenneth Doherty, Ph.D. — pp. 265-284 — published by Prentice-Hall, Inc., 70 5th Ave., New York, N.Y., 1953. Price $5.00.

"Track and Field Athletics" (Third Edition) — by G. T. Bresnahan and W. W. Tuttle — published by C. V. Mosby (Canadian Agents — McAinsh & Co Ltd., 1251 Yonge St., Toronto) — 1950. Price $5.00

Visual Aids

Films:

The Discus Throw — instructional, sound, B&W, 16mm. film — 10 minutes — produced as part of a Track and Field Series by United World Films (1947) in cooperation with the U.S. Olympic Association and the Amateur Athletic Union. Available from the Canadian Film Institute, 1762 Carling Ave., Ottawa, on either purchase or rental basis.

Films:

Fundamentals of Track and Field—sound, B. & W., 25 min. produced by Encyclopaedia Britannica 1954. Outlines Track and Field training procedures. Brutus Hamilton, U.S.A. Olympic Team Chief Coach at Helsinki in 1952 descrlbes proper techniques for seven Track and Field events. The performer is Bob Mathias, Olympic Champion. He demonstrates the Sprint, Broad Jump, Shot Put, High Jump, Discus and Pole Vault. The last sequence shows him in competition in the High Hurdles then illustrates how he practices and exercises for hurdle races. Commentary is clear and instructive. Time-stop and slow motion photography are used throughout to analyse movements and to bring out the fine points of of Mathias' form. Available from the Canadian Film Institute, 1762 Carling Ave., Ottawa, on rental basis.

Filmstrips:

Beginning Track and Field—Instructional, silent, colour—produced by the Athletic Institute, 209 S. State St., Chicago 4, Illinois. Consisting of 9 events—Sprinting; Hurdling; Middle Distance; Distance Relay Running; Running Broad Jump; High Jump; Pole Vault; Discus Throw; Shot Put; Javelin Throw. Available on loan from Fitness and Recreation Consultant Services, Department National Health and Welfare, on "Preview with a view to jurchase" basis only.

Loop Films:

Olympic Stars 1952—Instructional, silent, B. & W., 16 mm., produced by Scottish Instructional Films, Eaglesham, Nr. Glasgow, Scotland. Series of 6—1. Spring Start; 2. Sprint Starting and Running (McKenley); 3. Spring Starting and Running (MacDonald); 4. Hurdles (Dillard); 5. Hurdles (Davis, U.S.A.); 6. Long Jump (Gourdine). Shows technique by means of shots of Olympic champions in training and in performance. Available on loan from Fitness and Recreation Consultant Services, Department National Health and Welfare, on "preview with a view to purchase" basis only.

The Loop Film is particularly useful in coaching, in that it helps the athlete to fix in his mind a picture of good form. Three of several sources of loop films are:

Don Canham Series of 15 B&W slow motion films of Track and Field events, Ferry Field, Ann Arbour, Michigan. Price $20.00.

Payton Jordan Film Enterprises, P.O. Box 619, Whittier, California. Series of 15 colored slow motion films on Track and Field events. Price $35.00.

Scottish Instructional Films, Riverside Road, Eaglesham (near Glasgow), Scotland.

Provincial Fitness and Recreation Departments have a number of visual aids dealing with Track and Field Athletics, as well as duplicated and printed materials, and other services.

The Department of National Health and Welfare maintains a one print preview library of Fitness and Recreation instructional films. A consolidated catalogue describing these, entitled "Here's How To Do It 1960" has been deposited with Public Libraries, and with Provincial Fitness and Recreation Offices. Films listed therein are on deposit with the Canadian Film Institute, 1762 Carling Ave., Ottawa, and are available directly from them for a nominal service charge. Filmstrips and loop films listed therein are held by the Fitness and Recreation Consultant Services, Department of National Health and Welfare, and are available for screening only on "preview with a view to purchase" basis.

WHO'S WHO TO HELP YOU

Additional information may be obtained from: Provincial Fitness and Recreation Offices in the province in which you are located.

The Secretary,
Amateur Athletic Union of Canada,
621 Strathcona Street,
Winnipeg 10, Manitoba

Fitness and Recreation Consultant Services,
Department of National Health and Welfare
Jackson Bldg., Ottawa

Recreation Branch,
Royal Canadian Air Force,
Ottawa

Amendments to the Track and Field Rule Book may be obtained from the Queen's Printer for $0.25.

Track and Field Records including World, Olympic, British Empire and Commonwealth, etc., revised to the end of 1958 may be obtained from:

Major John W. Davies,
Chairman, Records Committee,
A.A.U. of C.,
3515 Minto Ave., Montreal 28, P.Q.

The price is $1.00.

Price 15 cents Cat. No. H92-8
Available from the Queen's Printer
Ottawa, Canada

THE QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1960

ENDORSEMENTS

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